

REMARKS

Reconsideration of the present application is respectfully requested. Claims 1 and 15 have been amended. No claims have been canceled or added. No new matter has been added.

Claims 1-48 stand rejected under 35 U.S.C. § 103(a) based on U.S. Patent no. 5,991,810 of Shapiro et al. ("Shapiro") in view of U.S. Patent no. 6,336,117 of Massarani ("Massarani"). The Examiner admits that Shapiro fails to disclose numerous elements of Applicant's claims (e.g., the recited user interface, rules database, rule evaluator, etc.). However, the Examiner cites Massarani as teaching such features and contends that it would be obvious to combine those teachings with those of Shapiro to achieve the claimed invention.

Applicant respectfully traverses the rejections. The amendments above are made only to place the claims in better form, not in response to the rejections or in response to any requirement of patentability. As explained below, each of the independent claims includes at least one limitation which is not disclosed or suggested in the cited art and which was present in the claim prior to this amendment.

In general, the present invention pertains to a network caching device that provides a user interface which allows a user (e.g., network administrator) to set up a set of forwarding rules for controlling how the caching device forwards content requests, when requested content is not found in a local cache.

Claim 1

Claim 1, as amended, recites:

1. (Currently amended) A device to operate as an intermediary node on a network, the device comprising:

a user interface to enable a user to specify a set of forwarding rules for forwarding requests on the network;

a database to store the set of forwarding rules;

a request processing unit to receive a request from a client; and

a rule evaluator to evaluate the set of forwarding rules to identify a rule in the set of forwarding rules which applies to the request, such that the request processing unit attempts to forward the request to **a destination selected according to said rule.** (Emphasis added.)

Shapiro and Massarani do not disclose or suggest such a method, either individually or in combination.

First, neither Shapiro nor Massarani provides any hint of selecting a destination to which to forward a request based on a rule that applies to the request. Both Shapiro and Massarani relate to access control (i.e., controlling access to content) and have nothing to do with selecting a destination for a request. Shapiro, for example, discloses that a proxy cache passes a request from a client to an access control agent, which compares parameters in the request against an access control list. The proxy cache then either permits or denies access to the requested information based on the outcome of that comparison. Col. 2, lines 16-27. However, in contrast with the present invention, Shapiro provides no hint of selecting a particular forwarding destination for a request according to the access control list or (per claim 1) according to a rule applies to the request.

Massarani discloses a database of filtering rules used for access control. Users are matched with a list of URLs, and the user is either allowed to visit a specified web site or not, based on the list. Col. 5, lines 10-24. However, in contrast with the present invention, Massarani provides no hint of selecting a particular forwarding destination for

a request according to the filtering rules or (per claim 1) according to a rule which applies to the request.

Second, neither Shapiro nor Massarani discloses or suggests an intermediary network node generating a user interface to enable a user to specify a set of forwarding rules for forwarding requests on the network. The Examiner admits that Shapiro does not disclose such functionality (Office Action, p. 2); however, the Examiner contends that Massarani discloses this functionality at col. 5, lines 10-16 (Office Action, p. 3). That contention is incorrect. In that section, Massarani merely discloses that a filtering/blocking table 200 can be installed at the proxy server 126. That is not the same as, nor even a hint of, the proxy server 126 (or any other intermediary network node) generating a user interface, much less generating a user interface that allows a user to specify a set of forwarding rules for forwarding requests on the network.

Furthermore, neither Shapiro nor Massarani contains any hint or suggestion to modify their teachings to achieve the functionality discussed above. For at least the above reason, therefore, claim 1 and all claims which depend on it are patentable over the cited art.

Claim 15

Claim 15, as amended, recites:

15. (Currently amended) A device to operate as an intermediary node on a network, the device comprising:
a processor;
a network interface to allow the device to communicate on the network; and
a storage facility to store program code for execution by the processor to cause the device to
provide a user interface to enable a user to specify a set of

forwarding rules,
receive a request for content from a client,
determine whether the content is cached locally in said device, and
in response to a determination that the content is not cached locally in the device,
evaluate the set of forwarding rules to identify a rule in the set of forwarding rules which should be applied to the request, and
forward the request on the network according to said rule.
(Emphasis added.)

Shapiro and Massarani do not disclose or suggest such a method, either individually or in combination. In particular, neither Shapiro nor Massarani provides any hint of an intermediary network node evaluating a set of forwarding rules to identify a rule in the set of forwarding rules which should be applied to the request, and then forwarding the request on the network according to said rule, in response to a determination that the content is not cached locally in the device.

As noted above, both Shapiro and Massarani relate to access control, i.e., filtering. Consequently, to the extent Shapiro or Massarani may evaluate and apply rules for request forwarding, they do so prior to (or independently of) determining whether the requested content is cached in the device. On the other hand, contrary to claim 15, to the extent Shapiro or Massarani may determine whether requested content is cached locally, they only do so after determining that the request is authorized, i.e., after applying the rule(s). For example, Shapiro states, “If, however, access is allowed, then the proxy cache server examines its web page data block 214 in memory 54 to determine whether the requested information is currently cached” (col. 5, lines 39-43)(emphasis added).

Furthermore, as discussed above, neither Shapiro nor Massarani

discloses or suggests providing a user interface to enable a user to specify a set of forwarding rules.

For at least the above reasons, therefore, claim 15 and all claims which depend on it are patentable over the cited art.

Claim 23

Claim 23 recites:

23. (Original) An intermediary network node comprising:
 means for receiving a request for content on a network; and
 means for determining a forwarding destination for the request in a defined forwarding hierarchy, by applying a set of user-specified forwarding rules to the request; and
 means for forwarding the request according to the determined forwarding destination.
(Emphasis added.)

Neither Shapiro nor Massarani discloses or suggests means for determining a forwarding destination for the request in a defined forwarding hierarchy, by applying a set of user-specified forwarding rules to the request. As noted above, Shapiro and Massarani both relate to access control, not to selecting a destination based on user-specified forwarding rules (see discussion of claim 1 above). For at least the above reasons, therefore, claim 23 and all claims which depend on it are patentable over the cited art.

Claim 26

Claim 26 recites:

26. (Original) A caching device to operate within a cache hierarchy on a network, the caching device comprising:
 a cache to store content requestable by a client on the network;
 a request processing unit to receive a request for content from the client, and to forward the request on the network based on a set of

forwarding rules in the event of a cache miss;

a user interface to enable a user to specify the set of forwarding rules, such that the user may specify one or more forwarding rules to indicate a host in the cache hierarchy as a destination for a corresponding request;

a database to store the set of forwarding rules;

a rule evaluator to evaluate the set of forwarding rules in response to the cache miss, to identify a rule in the set of forwarding rules which applies to the request; and

a rule engine to determine an availability of a host indicated in the rule, if any, and to select the host as a forwarding destination for the request if the host is available, the rule engine further to indicate the host to the request processing unit if the host is available to cause the request processing unit to forward the request to the host.
(Emphasis added.)

First, neither Shapiro nor Massarani discloses or suggests a rule engine to determine an availability of a host indicated in the rule, if any, and to select the host as a forwarding destination for the request if the host is available, the rule engine further to indicate the host to the request processing unit if the host is available to cause the request processing unit to forward the request to the host. Regarding selection of a forwarding destination, see the discussion of claim 1 above. Furthermore, there is no disclosure or suggestion in Shapiro or Massarani of a rule engine determining the availability of a host indicated in a forwarding rule. The Examiner cites Massarani as disclosing a rule engine with such functionality at col. 5 lines 54-67 and col. 6, lines 8-19. However, the citation is incorrect; no such functionality is even remotely suggested there or anywhere else in Massarani or in Shapiro.

Second, neither Shapiro nor Massarani discloses or suggests a caching device that comprises user interface to enable a user to specify the set of forwarding rules, such that the user may specify one or more forwarding rules to indicate a host in the

cache hierarchy as a destination for a corresponding request. See the discussion above regarding claim 1.

For at least the above reasons, therefore, claim 26 and all claims which depend on it are patentable over the cited art.

Claim 32

Claim 32 recites:

32. (Original) A network caching device to operate within a defined cache hierarchy on a network, the caching device comprising:

- a cache to store content from an origin server on the network;
- an application to receive a request for content from a client via the network, and to forward the request on the network based on a set of forwarding rules in the event of a cache miss;

- a user interface to enable a user to specify and modify the set of forwarding rules;**

- a rule encoder to encode into a uniform syntax forwarding rules specified by the user;

- a rules database to store the encoded forwarding rules;
 - a rule evaluator to evaluate the set of forwarding rules sequentially in response to the cache miss, to identify a rule in the set of forwarding rules which applies to the request, by identifying a correspondence between a variable in the request and a variable in the rule, the rule specifying a host within the cache hierarchy as a forwarding destination for the request; and

- a rule engine to determine an availability of the host and to select the host as said forwarding destination for the request if the host is available, the rule engine further to indicate the host to the application layer if the host is available to cause the application layer to attempt to establish a connection with the host, such that the application layer forwards the request to the host upon successfully establishing the connection.**

(Emphasis added.)

The above discussion of claim 26 also applies to claim 32. Further, claim 26 also includes additional limitations which are not recited in claim 26 and which not disclosed or suggested in the cited art. For at least the above reasons, therefore, claim 32 and all claims which depend on it are patentable over the cited art.

Claim 34

Claim 34 recites:

34. (Original) A method comprising:
receiving, at an intermediary network node, a request for content on a network;
determining, in the intermediary network node, a forwarding destination in a defined forwarding hierarchy, by applying a set of user-specified forwarding rules to the request; and
forwarding the request according to the determined forwarding destination.
(Emphasis added).

Neither Shapiro nor Massarani discloses or suggests determining, in an intermediary network node, a forwarding destination in a defined forwarding hierarchy, by applying a set of user-specified forwarding rules to a request. See the discussion of claim 1 above. For at least the above reasons, therefore, claim 34 and all claims which depend on it are patentable over the cited art.

Claim 37

37. (Original) A method of operating a caching device in a cache hierarchy on a network, the method comprising:
caching content on the network;
providing a user interface to enable a user to specify a set of forwarding rules;
storing the set of forwarding rules;
receiving a request from the client;
evaluating the set of forwarding rules if the request produces a cache miss, to identify a rule in the set of forwarding rules that applies to the request;
determining an availability of a host indicated in the rule;
attempting to establish a connection to the host if the host is available; and
forwarding the request to the host.
(Emphasis added.)

Neither Shapiro nor Massarani discloses or suggests evaluating a set of forwarding rules if the request produces a cache miss (see discussion of claim 15 above), to identify a rule in the set of forwarding rules that applies to the request. Further, neither Shapiro nor Massarani discloses or suggests determining an availability of a host indicated in the rule. Moreover, neither Shapiro nor Massarani discloses or suggests a caching device providing a user interface to enable a user to specify a set of forwarding rules. For at least the above reasons, therefore, claim 37 and all claims which depend on it are patentable over the cited art.

Dependent Claims

In view of the above remarks, a specific discussion of the dependent claims is considered to be unnecessary. Therefore, Applicants' silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim.

Conclusion

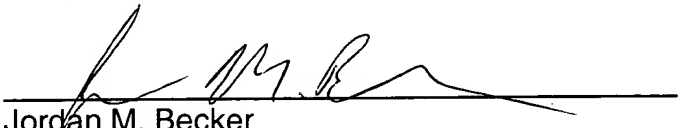
For the foregoing reasons, the present application is believed to be in condition for allowance, and such action is earnestly requested.

If any additional fee is required, please charge Deposit Account No. 02-2666.

Respectfully submitted,
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Date:

12/9/05


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